

## Time and Change

- Parmenides vs. Heraclitus:

- P: How could what is perish? How could it have come to be? For if it came into being, it is not; nor is it if ever it is going to be. Thus coming into being is extinguished, and destruction unknown.*

- H: One cannot step into the same river twice.*

## McTaggart on Time

- Our concept of time involves both Parmenidean and Heraclitean elements, to the point of inconsistency.

- Time is “unreal” in the sense that our concept does not fit anything in reality.

The A and the B

- Two kinds of temporal concepts, properties and relations:

- A-concepts*: those involving the notions of *past*, *present*, and *future*, and references dependent on these ideas.

- B-concepts*: those of *earlier than* and *later than*, objective temporal references such as May 15, 2007

## Egocentric/Allocentric

- Compare: conceiving of space in *egocentric* terms: in front of me, behind me, above me, to my left, to my right, etc. vs.

- Allocentric* terms: latitude and longitude, objective spatial references such as “100 miles north of London.”

## The Overall Argument

- (1) Time requires change

- (2) Change can only be expressed or described using A -concepts.

- (3) The A - concepts are contradictory.

- (4) Therefore, time is unreal.

## (1) Time requires change

- Time is the measure of change, or the field in which change occurs.

(2) Change can only be expressed in A-terms. 262-3

- No change is discernible in purely B- terms.

- B- properties and relations are timeless and eternal.

- “The Civil War IS earlier than the Great Depression.”

—This is an eternal, unchanging fact.

### A B-characterization of change?

- Russell's suggestion 263-4:

- A particular x changes if and only if:

For some property F, and times t1 and t2:

x IS F at t1, and x IS not F at t2.

With no restrictions on F, this leads to some funny changes, but maybe that's OK.

### Not Good Enough

- McT: this is not adequate for change.

- 'x IS F at t1' and 'x is not F at t2' are both eternal facts. There is no change here at all.  
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—No more than an object having one property at a spatial point, and another property at another spatial point.

—Reminiscent of Zeno's paradoxes of motion.

### A- change

- All change takes the form of an event in the *future* becoming *present* and then receding into the *past*.

- The argument if correct shows that such flow is an essential aspect of time.

(3) The A – concepts are contradictory

- The notions of past, present, and future are incompatible. (obvious)

- BUT

- Every event has all three properties ?? (very NOT obvious and needs to be shown)

### Reality must have a single complete description

- See Dummett's essay on McT's argument

- McT's commitment to this Parmenidean idea explains his unwillingness to allow unreduced A-descriptions.

- Any description of temporal reality that uses A-descriptions is only partial in the sense that it leaves out certain facts.

—Those A-facts accessible only from other positions in time

### What about Space?

- Is that unreal too?

—Recall that there is an egocentric/allocentric distinction that can be drawn for space.

—And egocentric descriptions from different points of view cannot be combined.

- No, because we can give a complete description of a space by simply *leaving out the egocentric facts entirely*.

—There is no analogue for space of the first part of McT's argument.

### Time's Epitaph

- A complete description of temporal reality *must* include facts stateable only in A-terms  
—To account for change, which is essential to the reality of time.
- But a complete description of temporal reality *cannot* include facts stateable only in A-terms.  
—Because such facts are inherently partial and perspectival.

### Presentism

- McT's argument assumes that we have to defend the reality of the past and the future as well as the present.
- Suppose we say that the past and the future do not exist.
- Reality = the present.

### Prior's Idea

- We don't believe that reality includes the *existent* (GWBush) and also the *non-existent* (Pegasus).
- We don't believe that reality includes the *existent* and the "*believed by little Sally to exist*" (Santa Claus).
- ?We don't believe that reality includes the *actual* (HRCClinton) and the merely *possible* (HRC's first-born son). . . .

### No past, no future

- . . . so we shouldn't believe that reality includes in addition to the *present* things (GWBush), the *past* things (A. Lincoln) or the *future* things (the first person born next year).
- Tense—presence—is fundamental to time.
- Reality is completely described by listing all the truths from the present point of view.

### What about facts about the past?

- It's a fact that Abe Lincoln was president of the US.  
—This doesn't seem to be a fact about the present.  
—The trick is to understand this fact as not entailing the existence of AL.
- Compare: how do we express the facts about Pegasus and Santa Claus?

### Intensional Contexts

- *According to the myth* (Pegasus was a winged horse.)
- *Little Sally believes that* (Santa Claus brings presents to all good children.)
- *It is possible that* (the Clintons' son is Chelsea's older brother.)

### Existential Generalization fails in some contexts

- Usually, from “a is F” it follows that “There exists an x s.t. x is F.”
- But from: “Sally believes that Santa Claus is coming tonight,” it does not follow that “There exists an x s.t. Sally believes x is coming tonight.”

### Tense is another kind of intensional context

- Prior’s idea is that statements about the past and future should be treated like myth and belief statements.
- “Abe Lincoln was president in 1863” =
- *It was the case that* (Abe Lincoln is president in 1863.)
- This does not entail that anyone exists and has the *property* of being president in 1863.

### Tense is fundamental

- There are no tenseless verbs.
- Temporal reality is essentially and irreducibly tensed.
- B-relations are derivative from the notions of past, present, and future:
- “The CW was earlier than WW1” =
- (something like) WAS[WAS(CW is occurring) & WWI is occurring]

### Change in Presentism

- Events do not change, only things change.
- There is no temporal becoming in McT’s sense.
- Change in an object: “[It was the case (that the poker is hot)] and [the poker is cool].”

### Presentism and Physics

- Presentism requires that “the present” be a well-defined notion from a metaphysical point of view.
- This seems to contradict modern physical theories, especially Special Relativity.
- In these theories time and space must be treated as an integrated whole.
- One result: which events are simultaneous depends on the frame of reference.